

The onomatophores of *Paramesotriton deloustali* (Bourret, 1934) (the seven errors game)

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In the original description of *Mesotriton deloustali* by René BOURRET (1934), no onomatophore (type specimen) was expressly mentioned. However, this description included detailed measurements of two individuals, one of which was pictured on a plate, and a skull was figured on a sketch. These specimens are identified in the MNHN (Muséum national d'Histoire naturelle, Paris), Reptiles and Amphibiens collection. A lectophoront (lectotype) is here formally designated, and the two remaining specimens therefore become exonymophoronts (paralectotypes).

INTRODUCTION

Salamanders and newts are amphibians mainly distributed in the northern temperate regions. Few species of Salamandridae Goldfuss, 1820, a Palaearctic family, are known to occur at the northern limit of the Oriental realm. *Paramesotriton deloustali* (Bourret, 1934) is such a species, discovered in the northern part of Vietnam at the beginning of the 20th century but described some decades later. Other members of this genus were known from China, but recently a species was described from Laos (RAFFAELLI, 2007). As a result of research on the biography of René Bourret, new data from his notes are available. Thus we restudied his collection and reassessed the status of the specimens of *Mesotriton deloustali* originally from this collection, in particular the onomatophores ("name-bearing types" or "type specimens").

Currently (October 2008), the genus *Paramesotriton* Chang, 1935 includes nine species, *P chinensis* (Gray, 1859), *P deloustali* (Bourret, 1934); *P hongkongensis* (Myers & Leviton, 1962), *P caudopunctatus* (Liu & Hu, 1973); *P guangxiensis* (Huang, Tang & Tang, 1983), *P fuzhongensis* Wen, 1989, *P laocensis* Stuart & Papenfuss, 2002, *P hupinensis* Li, Tian & Gu, 2008, *P longhenensis* Li, Tian, Gu & Xiong, 2008 (RAFFAELLI, 2007, LI, TIAN & GU, 2008, LI et al., 2008, ZHAO et al., 2008). The affinities of several species, obviously closely related, require to be specified. Moreover, recent work suggests that *P caudopunctatus* and *P laocensis* could deserve generic separation (WILSON et al., 2006, RAFFAELLI, 2007). It is also necessary to

note nomenclatural problems due to the “double description” of a recent species: the description of *P. zhymensis* Li, Tian & Gu, 2008 was published in April 2008, i.e., before *P. zhijinensis* Zhao, Che, Zhou, Chen, Zhao & Zhang, 2008, published in May 2008.

Paramesotriton deloustali is known from about ten localities in the following provinces of northern Vietnam: Bac Kan, Ha Giang, Lao Cai, Tay Nguyen, Tuyen Quang, Vinh Phuc and Yen Bai. The population of Lao Cai (north-western Vietnam, west of the Red River), recently discovered in the mounts Hoang Lien (district of Van Ban) could be taxonomically distinct from *Paramesotriton deloustali* (RAFFAELLI, 2007 and pers. comm., October 2008). All these uncertainties show that more investigations are needed, especially since most of the species occupy restricted areas and are threatened. Therefore a review of the onomatophores (type specimens) of *Mesotriton deloustali* Bourret, 1934, nucleospecies (type species) of the genus, appears useful.

METHODOLOGY

We follow BOURRET in designating as Tam Dao the mountain itself (21°31'N, 105°53'N) and its surroundings, in particular the hill station (BOURRET, 1940b). All studied specimens are deposited in the Reptiles and Amphibians collection of the Muséum national d'Histoire naturelle (MNHN), Paris, France. They were collected by Bourret, who had been forewarned of their existence by “*M. Deloustal*” Eugène Deloustal (1881-1942), friend of René Bourret and chief land surveyor at the Land register and Topographical service at Hanoi, owned a residence at Tam Dao. Actually, according to Catherine Meste (pers. comm., September 2008), grand-daughter of Eugene, the first observation of the salamander in the torrent of the hill station was made by André Deloustal (1909-1996), son of Eugène (fig. 1). We use here the nomenclatural terms defined by DUBOIS (2005) to designate the various categories of “types” and related expressions.

NOMENCLATURE STATUS OF THE SPECIMENS OF *MESOTRITON DELOUSTALI* COLLECTED BY BOURRET

On December 1934, René BOURRET described a new genus and a new species of salamander discovered at Tam Dao in Tonkin, then part of French Indo-China. *Mesotriton deloustali* was dedicated to “*M. Deloustal, géomètre au Cadastre*”, who had announced its existence to him “*a long time ago*” [depuis longtemps], but the animals had been caught by Bourret himself. The author gave measurements of two individuals (a male 181 mm long, a female of 172 mm), one of them illustrated on a plate; additionally, a skull was outlined (BOURRET, 1934) (fig. 2, 3a, 4a). Being the only ones mentioned in the original publication, these three specimens represent the symphoronts (syntypes) of the species. The two measured specimens had been maintained in captivity for one year at the date of description: therefore they had probably been captured in 1933 (see below). BOURRET did not precisely mention onomatophores (type specimens), and no registration numbers were given. It was the first



Fig. 1 - Eugène Thérèse Louis Deloustal (1881-1942) and his son André Louis Maurice Deloustal (1909-1996), discoverers of *Paramesotriton deloustali* described by BOURRET in 1934. Photographs communicated by Catherine and Michel Meste, their grandsons and nephews.

time that he described an amphibian, as his previous *Notes herpétologiques* were dealing only with snakes. In his personal copy of the original description, Bourret added with pencil 'Z 373' for the individual of 181 mm identified as male and '257' (i.e. B 257) for that of 172 mm identified as female. It is a double error: B 257 is the number that he gave later (1939) to the specimen of 181 mm and Z 373 that which he attributed in the same publication to an unsexed individual captured at Tam Dao in 1938.

The following year, Mangven Chang from Shanghai came to work at the Paris Natural History Museum. Studying *Mesotriton deloustali*, beside noticing that the generic nomen *Mesotriton* was nomenclaturally preoccupied, he found that four specimens of this species, accessed in 1908 and 1911, were already in the collection, wrongly identified as *Tylosotriton terricosus* Anderson, 1871 (CHANG, 1935a). Shortly after, CHANG (1935b) proposed the new genus nomen *Paramesotriton* to replace *Mesotriton* Bourret, 1934, preoccupied by *Mesotriton* Bolkay, 1927 (described as subgenus) – a nomen which has *Triton alpestris* Laurenti, 1768 as nucleospecies (type species) by subsequent designation of THORN (1969).

BOURRET mentioned this salamander again, using the nomen *Paramesotriton deloustali*, only in December 1937. He precised that the specimen of 181 mm described in 1934 was still alive, and revealed the capture by himself at Tam Dao, the onymotope (type locality), of 12 new specimens without specifying their sex. The measurements of four of them (B 226 to B 229) were given (tab. 1). In a list of species and a list of specimens, the locality of Ha-Tiên,

No	B-227		B-228		No	B-226		B-227		No	B-229		No
	172 mm	172 mm	172 mm	172 mm		172 mm	172 mm	172 mm	172 mm				
Longueur totale	181	172	181	172	180	179	180	179	186	186	179	186	407
Longueur de la tête	28,5	28	28,5	28	29	27	29	27	29	29	27	29	407
Largeur de la tête	21	20	21	20	22	22	22	22	22,5	22,5	22	22,5	407
Distance du museau au pli guaire	27,2	27	27,2	27	28	28	28	28	28,5	28,5	28	28,5	407
Pli guaire jusqu'à l'anus	64	61	64	61	63	62	63	62	63	63	62	63	407
Longueur de la queue	84	81	84	81	81	80	81	80	81	81	80	81	407
Hauteur au milieu du corps	110	107	110	107	109	107	109	107	109	109	107	109	407
Hauteur au milieu du corps	20	20	20	20	20	20	20	20	20	20	20	20	407
Largeur de la queue	17	17	17	17	17	17	17	17	17	17	17	17	407
Épaisseur de la queue	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	407
Écartement entre les yeux	13	13	13	13	14	14	14	14	14	14	14	14	407
Distance entre les yeux	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	407
Distance entre les narines	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	407
Diamètre de l'orbite	5	5	5	5	5	5	5	5	5	5	5	5	407
Distance de la narine à l'œil	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	4,5	407
Diamètre de la narine à l'œil	7	7	7	7	7	7	7	7	7	7	7	7	407
Longueur des membres antérieurs	30	30	30	30	30	30	30	30	30,5	30,5	30	30,5	407
Longueur entre les membres antérieurs	41	41	41	41	41	41	41	41	41	41	41	41	407
Distance entre les membres antérieurs et postérieurs	45	45	45	45	45	45	45	45	45	45	45	45	407

1934

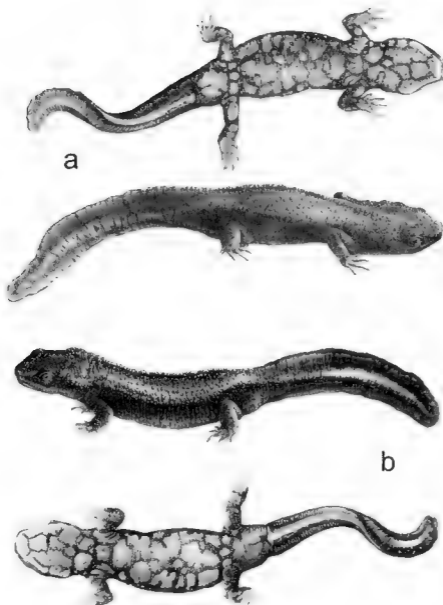
1937

1939

1940

No	B-237		Z-270		Z-271		Z-272		Z-273		Z-274		Z-275		No
	172 mm	172 mm	172 mm	172 mm	172 mm	172 mm	172 mm	172 mm	172 mm	172 mm	172 mm	172 mm	172 mm		
Longueur totale	209	195	209	195	206	197	206	197	206	197	206	197	206	42	
Longueur de la tête	31	30	31	30	31	30	31	30	31	30	31	30	31	42	
Largeur de la tête	25	24	25	24	24	24	24	24	24	24	24	24	24	42	
Distance du museau au pli guaire	72	61	72	61	69	67	69	67	69	67	69	67	69	42	
Pli guaire jusqu'à l'anus	106	81	106	81	81	77	81	77	81	77	81	77	81	42	
Longueur de la queue	24	20	24	20	20	20	20	20	20	20	20	20	20	42	
Hauteur au milieu du corps	18,5	17	18,5	17	17	17	17	17	17	17	17	17	17	42	
Hauteur de la queue	12,5	12	12,5	12	12	12	12	12	12	12	12	12	12	42	
Écartement entre les yeux	6,5	6	6,5	6	6	6	6	6	6	6	6	6	6	42	
Distance entre les yeux	6,5	6,5	6,5	6,5	6,5	6,5	6,5	6,5	6,5	6,5	6,5	6,5	6,5	42	
Diamètre de l'orbite	9	9	9	9	9	9	9	9	9	9	9	9	9	42	
Distance de la narine à l'œil	31	27,5	31	27,5	27,5	27	27,5	27	27,5	27	27,5	27	27,5	42	
Longueur des membres antérieurs	32	26,5	32	26,5	26	26	26	26	26	26	26	26	26	42	
Longueur entre les membres antérieurs et postérieurs	42,5	36,5	42,5	36,5	36,5	36	36,5	36	36,5	36	36,5	36	36,5	42	
Distance entre les membres antérieurs et postérieurs	47,5	41,5	47,5	41,5	41,5	41	41,5	41	41,5	41	41,5	41	41,5	42	

Fig. 2 Measurements of *Parameionia delostubis* (Bourret, 1934) taken by Bourret, such as they were published by himself (Bourret, 1934). Measurements of *Parameionia delostubis* (Bourret, 1934) taken by Bourret, such as they were published by himself (Bourret, 1934).



Nguyen & Juan, *del. et. pinx.*

Fig. 3. *Paramesotriton diouisi* (Bourret, 1934), male specimen MNHN 1935.119, lectophoront (lectotype) of the species (a) From Bot RRI 1 (1934) plate 1 (b) Water colour (original) by Nguyễn-Văn-Xuân, reproduced in Bot RRI T (1942)

Table 1 Main measurements (in millimetres) of the lectophoront (lectotype), MNHN 1935.119, and of one of the two exonymophoronts (paralectotypes), MNHN 1948.110, of *Paramesotriton deloustali* (Bourret, 1934). Comparison with the figures given by BOURRET in his publications (see fig. 2) The methods used to take these measurements (landmarks) are obviously distinct for the limbs

Reference or registration number	Lectophoront (lectotype) MNHN 1935.119		Exonymophoront (paralectotype) MNHN 1948.110	
	BOURRET, 1934	Our measurements	BOURRET, 1939 (B.257)	Our measurements
Sex	♀	♂	♀	♀
Total length	172	170	209	208
Snout-vent length		84.5	97 (25 - 72)	100
Head width	20	20.8	25	25.0
Distance snout - gular fold	27	26.5	25	23.5
Tail length	70	72.2	106	100
Maximum tail height	18	18.0	18.5	17.8
Distance between eyes	15	12.5 - 15.0	13.5	13.0 - 16.0
Minimum distance between nostrils	5.5	5.5	6.5	6.0
Maximum diameter of orbit	4.5	4.4	6.5	6.3
Minimum distance nostril eye	7	6.5	9	7.8
Forelimb length	30	27	31	29
Hindlimb length	30	26	32	28
Distance between forelimb and hindlimb	44 (?)	37.5	47.5	48

in Cochinchina, was twice erroneously associated with the specimen B 229 (BOURRET, 1937). In this note, for the first time BOURRET gave the registration numbers of his collection of amphibians. B.1 was attributed to a specimen of *Rana tigrina rugulosa* Wiegmann, 1834, a junior synonym of *Hoplobatrachus chinensis* (Osbeck, 1765). It is surprising that Bourret did not number all the twelve collected individuals of *Paramesotriton*. Pure assumption, one could think that the four specimens B 226-B 229 were already present in the collection in 1934, so that they would belong, if not in the onomatophores, at least in the hypodigm, material seen by the author at the time of the first description of the taxon (SIMPSON, 1940). Later, BOURRET himself (1942, see below) considered two of them (B 226 and B 228) as belonging to the symphoronts. This interpretation, hardly plausible, is anyway not necessary for the knowledge of the species.

As soon as February 5th, 1935, the Paris Natural History Museum had received a sending from Bourret, including a specimen in alcohol (recorded under number MNHN 1935.119) and a skull (MNHN 1935.120) of his new species of salamander, as well as a turtle. THIREAU (1986) rightly noted that the skull could be that illustrated by BOURRET (1934), so that it would be the third original symphoront. A careful study of this skull reveals that it is unquestionably the very one depicted by BOURRET. A noticeable dissymmetry at the level of the anterior half of the vomers and of the ventral opening of the choanae is accurately depicted on the sketch (fig. 4b). On the other hand, the specimen MNHN 1935.119 is clearly that which had been illustrated on the plate included in the original description: the colour pattern of the ventral face, very variable in this species and allowing individual recognition of specimens, is identical (fig. 5). This specimen is a member of the symphoronts, a male, with a length of 170 mm (tab. 1). An error appears in connection with the data given by BOURRET about this salamander, in the original description, the author specified "One of them [specimens measured and alive] is illustrated in natural size on the opposite plate". However, the male measured 181 mm in 1934. It is difficult to admit that it lost approximately 10 mm length, especially as BOURRET announced it as being still alive in 1937. Consequently, we question the identity of the second measured specimen, the "female" of 172 mm. The overall length of the specimen and several measurements, as well as dimensions of the illustrated salamander, correspond rather well to those given by BOURRET. We must thus admit that the "female" of 172 mm of the original description is the specimen MNHN 1935.119, a male. One can be astonished that Bourret has sacrificed a living individual, kept in captivity for one year, to give it to the Paris Museum. Most probably he did not have any other specimen at hand at that time. This specimen still carries a label, "Tamdao 1934", which would be in contradiction with a capture in 1933. However, this label is not original, as the salamander had been kept alive for one year.

In February 1939, BOURRET gave measurements of eight specimens, all passed away during the summer of 1938: the specimen kept alive since 1933 (or 1934), already mentioned in 1937, numbered B.257, and seven others captured at Tam Dao in 1938, numbered Z.370 to Z.373 and Z.382 to Z.384 (BOURRET, 1939a) (fig. 2). Another mistake, partly corrected by BOURRET, appeared in this note: the B.257 specimen was identified as a female (of 209 mm), whereas the previous note (1937) mentioned the specimen of 181 mm, the male of the original description, as being the specimen kept alive. Obviously, there already had been a confusion made by Bourret in the identification of the sex. He probably had made an inversion, we can conclude that the specimen of 181 mm (in 1934) and of 209 mm (in 1939), *a posteriori* numbered B.257 and finally identified as a female, is the second symphoront measured by the author.

During the year 1939, Bourret captured four new adult specimens, again at Tam Dao, measured and numbered Z.404 to Z.407. The sex of one of them was not established, indicating the difficult sexing of this species (BOURRET, 1940a) (fig. 2). In the following two notes, the author repeated that *Paramesotriton deloustali* was known only from Tam Dao (BOURRET, 1940b-c).

Finally, in his monograph *Les Batraciens de l'Indochine*, BOURRET (1942) proposed new description and illustrations of the salamander. Unfortunately, two new errors appeared in this work. The illustration inserted in the text shows, according to the caption, the specimen B.226, this caption indicates that this same specimen is also represented on colour plate I.

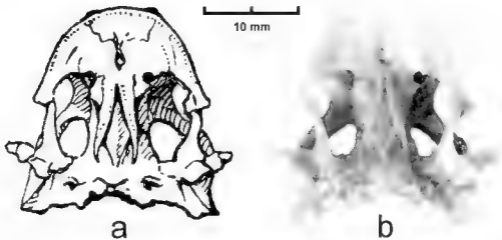


Fig 4. *Paramesotriton deloustali* (Bourret, 1934) (a) Sketch of the skull published by BOURRET (1934) in the original description, exonymophoront (paralectotype) of the species. (b) Skull MNHN 1935 120, exonymophoront (paralectotype) of the species, condylo-basal length, 19.2 mm. Both in ventral view.

figure A. But this plate depicts the specimen already illustrated in 1934, i.e. that given to the Paris Museum, MNHN 1935 109. Amazingly, these two illustrations (1934 and 1942), although unquestionably based on the same individual, are significantly different (fig. 3). The engraving in black and white (1934) was probably obtained starting from a photograph, whereas the figure of the plate (1942) was the reproduction of a water colour suggesting that the specimen was alive. The original of this figure, made by Nguyen-Văn-Xuân, was given by Bourret to the MNHN in 1947, together with all the illustrations of his monograph. Another mistake was of nomenclatural order: BOURRET indicated that "the types are preserved at the Laboratory of the Natural Science at the Indochinese University under the numbers 226, 228, 257 and [skull] 287". However, the specimens B 226 and B 228 were first mentioned only in 1937 and they almost surely do not form part of the onomatophores of the original description (see above). On the other hand, the specimen B 257 is one of the two measured symphoronts, the second one being that recorded under number MNHN 1935 119. Lastly, the skull MNHN 1935 120 being, as shown above, the very specimen illustrated in the original description and therefore the third symphoront, the skull B 287 cannot have this status.

In a letter dated June 22nd, 1946 addressed to his mentor, the geologist Charles Jacob, Bourret wrote "I do not know when I will be able to recover the whole [personal copies of his publications, personal library], as well as some specimens in the collections which I intended to keep for the Natural History Museum of Paris (in particular types of new species). I would not like to leave before this question is settled" (Archives of the Institute of France, Jacob collection). Bourret managed to leave Indo-China the following year, whereas another boat brought his works back to France. The onomatophores were actually given to the Paris Museum. For his *Paramesotriton deloustali*, Bourret gave the specimens B 257, B 226 and B 229, that were renumbered respectively MNHN 1948 110, 111 and 109 (fig. 6-7). The B 257



Fig 5. *Paramesouriton deloustali* (Bourret, 1934) Male specimen MNHN 1935 119, lectophoront (lectotype); present state, dorsal and ventral view

specimen is that which had lived 5 years in captivity, the female of 181 mm which had reached 209 mm, symphoront of the species (tab. 1). On the other hand, similar to B.226 already mentioned, B.229 cannot belong to the onomatophores. Moreover, during recording in the catalogue of the Paris Museum, it had been erroneously associated with the locality Ha-Tiën, a mistake probably originating from BOU RRET'S (1937) note (see above). In addition, and it is there an extra error, as opposed to what indicates the caption of the figure published in 1942 the specimen shown is quite distinct from that labelled B.226 when it was given to the Paris



Fig 6 *Paramesotriton deloustali* (Bourret, 1934) Female MNHN 1948 110 (ex B 257), exonymphoront (paralectotype); present state, dorsal and ventral view



Fig. 7 *Paramesotriton deloustali* (Bourret, 1934) Other specimens given by René Bourret to the Museum of Natural History, Paris: male MNHN 1948 111 (ex B 226); male MNHN 1948 109 (ex B 229) Both in dorsal and ventral view

Museum (MNHN 1948.111). Either there was confusion in the caption, or the specimen given to the MNHN was not B 226. The second alternative is less probable, the attached tag being handwritten by Bourret himself. The complete list of the specimens of *Paramesotriton deloustali* (Bourret, 1934) measured by Bourret is presented in fig. 2 Table 2 summarises the history of the various specimens of Bourret and their designations in his publications

CONCLUSION

It is obvious that the absence of registration numbers and of formal designation of nomen-bearing types, as well as an inversion of the sex determination in the original description of *Mesotriton deloustali* by BOURRET, were sources of confusions which made the precise identification of the symphoronts of the species difficult. The male specimen MNHN 1935 119 and the female specimen MNHN 1948 110 are unquestionably those whose measurements are given in the original description of the species in 1934: they are two certain symphoronts. The skull MNHN 1935.120, illustrated in the original description, is the third symphoront. Only the first of them had until now been recognized as "type". CHANG (1935a) considered it as a "cotype" (syntype). GUIBÉ (1950) mentioned it as a "paratype", without however specifying the identity of the holotype, giving a length of 198 mm (error for 168 mm?). THIRIAU (1986) recognized it as "syntype", but, probably following BOURRET, identified it as a female and gave a length of 172 mm. THIRIAU put the specimens MNHN 1935 120 (skull), MNHN 1948 110 (B.257) and MNHN 1948 111 (B 226) in the category "materials

Table 2. Summary of history of specimens of *Paramesotriton deloustali* (Bourret, 1934) mentioned by BOURRET in his works of 1934, 1937, 1939, 1940 and 1942. Data between quotation marks are in error

Specimen	Status	MNHN	1934	1937	1939	1940	1942 text	1942 figure
Male	Lectophoront	1935.119	"Femelle"					"B 226"
Female	Exonymophoront	1948.110	"Mâle"		B.257		B 257	B 257
Skull	Exonymophoront	1935.120	Crâne					
B 226	Aphoront	1948.111		B 226			B.226	
B.227	Aphoront			B 227				
B.228	Aphoront			B.228			B.228	
B 229	Aphoront	1948.109		B.229				
Z.370	Aphoront				Z.370			
Z.371	Aphoront				Z.371			
Z.372	Aphoront				Z.372			
Z.373	Aphoront				Z.373			
Z.382	Aphoront				Z.382			
Z.383	Aphoront				Z.383			
Z 384	Aphoront				Z.384			
Z.404	Aphoront					Z.404		
Z.405	Aphoront					Z.405		
Z.406	Aphoront					Z.406		
Z.407	Aphoront					Z.407		
B 285	Aphoront							B.285 (Skull)
B.287	Aphoront						B 287 (Skull)	

under justice" (they "require a very thorough specific study"). The status of MNHN 1948 109 (B.229, "Ha-Tiên") was not specified by THIREAU.

We formally designate here the male specimen registered as MNHN 1935 119 as the lectophoront (lectotype) of *Mesotriton deloustali* Bourret, 1934. It is the specimen illustrated twice in the publications of the author (fig. 3), and thus the best known among the scientific community. This designation is therefore in agreement with the recommendation 74B of the *International Code of Zoological Nomenclature* (ANONYMOUS, 1999), "an author who indicates a lectotype should give the preference to a syntype whose illustration was published". Consequently, the specimen MNHN 1948 110 (B.257) is one of the two exonymophoronts (paralectotypes) of the species. The second exonymophoront is the specimen whose skull was drawn by BOURRET in 1934. It is recorded in the Paris Museum under the number MNHN 1935 120. The precise onymotope (type locality) is the torrent of the hill station of Tam Dao (Tam Đảo), province of Vinh Phúc, Vietnam (at an altitude of approximately 900 meters

according to BOLRRET, 1940*b*). Nowadays, according to Thomas Schottler (pers. com. to RAFFAELLI, 2007), the adults seem to have disappeared from the pool located downstream from the brook at Tam Dao.

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